

REMARKS

Claims 1-27 are pending in this application, wherein claims 1-17 and 25-27 were withdrawn from consideration in a Response to Restriction Requirement filed January 6, 2006. In an Office Action mailed February 17, 2006 ("OA"), the Examiner rejected claims 18-24. In this response, the Applicants amend claims 18, 21, and 22, cancel claims 19 and 20, and add new claims 28-35. Applicants respectfully traverse the rejections and request reconsideration based on the following remarks.

In addition, Applicants do not automatically agree with or acquiesce in the Examiner's characterization of the claims or the prior art, even if those characterizations are not addressed herein.

Specification

The Examiner objected to the abstract because the last six lines refer to the purported merits in the invention. In this response, Applicants amend the abstract by deleting the last six lines. Therefore, Applicants respectfully request the Examiner to withdraw the objection.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 20-22 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. In particular, the Examiner alleged that claim 20 is unclear because "[i]t is unclear how a situation having one marker transmit signal can be 'summed' to create a zero delay phase."

Applicants respectfully submit that the Examiner's reference to paragraphs 63-64 corresponds to some embodiments having more than one marker. But the specification further

supports locating a single marker by determining a market transmit signal and then summing a marker transmit signal. For example, in the specification at paragraphs 80-88, esp. 80 and 88, Applicants describe the process of frequency adaptation for a single-marker scenario. Therefore, Applicants respectfully submit that the claimed invention is proper because the specification provides support for locating a one or more markers.

Further, the Examiner alleged that claims 20-22 omit essential steps. The Examiner alleges that Applicants noted an important constraint to the system at paragraph 57. Applicants respectfully submit that the Examiner is referring to some embodiments of the invention, as stated in a paragraph 57 provided below:

Marker locator transceivers, such as marker locator section 423 of locator 400, transmit known and adjustable frequency bursts while synchronously capturing the signals reflected from the markers. In the embodiment illustrated in FIG. 4, the output signal bursts are created in transmitter output signal generator 435. For a simple search involving only one type of marker, the initial output signal passed to DAC 403 is a single sinusoidal tone at the nominal marker frequency (e.g., 101.4 KHz for telephone cable markers). DAC 403 is also capable of transmitting a marker excitation signal combined by superposition that stimulates multiple markers simultaneously. In some embodiments, an important constraint is placed on the transmitter output signal—the phase of the output burst is set such that the beginning of the input block after ADC sampling in the receiver is defined as zero degrees for each marker stimulus frequency. Therefore, the digital phase locked loop (DPLL) in the receiver path (i.e., in detection DPLL 433) can create an error signal and tend toward a locked state at zero-phase.

Applicants' specification at paragraph 57.

In other words, in some cases, Applicants' claimed invention may have this important constraint, but this important constraint is not placed on all embodiments of the claimed invention.

However, to further prosecution, Applicants amend claim 18 to include "wherein the market transmit signal is phase shifted to provide a delay phase of substantially zero at the end of

the electromagnetic pulse." Because Applicants amend claim 18 based on the Examiner's suggestion, Applicants respectfully submit that the claimed invention is proper.

If the Examiner is not persuaded by the arguments presented above, Applicants respectfully request the Examiner to provide further analysis regarding the interpretation of the claims.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 20-22 would be allowable if they included the features of the claims from which they depend. Claim 20 depends on claim 19, which further depends on claim 18. Accordingly, Applicants amend claim 18 to include the subject matter of claims 19 and 20. Applicants would like the Examiner to note that Applicants have included additional limitations based on the Examiner's suggestion provided in OA. Therefore, as indicated by the Examiner, claim 18 is allowable over the prior art. Claims 21-24, which depend on claim 18, are patentable for at least the same reasons as claim 18.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 18 and 19 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,977,504 ("Wright et al."). In the Office Action, the Examiner indicated that claims 20-22 would be allowable if rewritten in independent form to overcome the rejection. In this response, as noted above, Applicants amend independent claim 18 to include the limitations of claim 19 and 20. Therefore, Applicants respectfully request the Examiner to withdraw the rejection.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 18, 19, 23, and 24 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,362,737 ("Rodgers et al.") in view of U.S. Patent No. 5,512,834 ("McEwan et al."). In the Office Action, the Examiner indicated that claims 20-22 would be allowable if rewritten in independent form to overcome the rejection. As stated above, Applicants amend independent claim 18 to include the limitations of claim 19 and 20. Therefore, Applicants respectfully request the Examiner to withdraw the rejection.

New Claims

New claims 28-36 have been added. The new claims are supported by Figure 1. Independent claims 28 describes a method of locating one or more markers comprising "generating a series of electromagnetic pulses; receiving signals as a function of time between application of the pulses, wherein the signals are from one or more markers identifying at least one utility line; averaging the signals over a predetermined number of pulses to obtain an average decay signal; initially determining a frequency, field strength, and phase for responses from the one or more markers; and accurately determining the frequency, field strength, and phase by successive elimination of a contribution from each of the one or more markers" (emphasis added). The prior art of record fails to disclose "the signals are from one or more markers identifying at least one utility line." Therefore, independent claim 28 is patentable over the prior art of record. Claims 29-34, which depend on claim 28, are patentable for at least the same reasons as claim 28.

Independent claim 35 describes a marker locator for detecting and determining the location of one or more markers that identify a utility line, the marker locator including "an antenna that provides a series of electromagnetic pulses and receives signals as a function of time between application of the pulses, wherein the signals are from one or more markers identifying

at least one utility line; and a processor that averages the signals over a predetermined number of pulses to obtain an average decay signal, initially determines a frequency, field strength, and phase for responses from the one or more markers, and accurately determines the frequency, field strength, and phase by successive elimination of a contribution from each of the one or more markers" (emphasis added). Like claim 28, the prior art of record fails to teach or disclose "the signals are from one or more markers identifying at least one utility line." Therefore, independent claim 35 is patentable over the prior art of record.

CONCLUSION

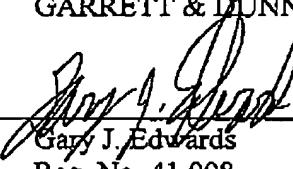
In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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